SEQUENCE LISTING

<110> THE GOVERNMENT OF THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE SECRETARY OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES CENTERS FOR DISEASE   CONTROL AND PREVENTION
       Rosely M. Zancope-Oliveira
       Timothy J. Lott
       Leonard W. Mayer
       Errol Reiss
       George S. Deepe

<120> NUCLEIC ACIDS OF THE M ANTIGEN GENE OF
  HISTOPLASMA CAPSULATUM, ANTIGENS, VACCINES, AND ANTIBODIES,
  METHODS AND KITS FOR DETECTING HISTOPLASMOSIS

<130> 14114.0325U2

<140> 09/674,195
<141> 2000-10-26

<150> 60/083,676
<151> 1998-04-30

<150> PCT/US99/09151
<151> 1999-04-27

<160> 13

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 3862
<212> DNA
<213> Histoplasma capsulatum

<220>
<221> misc_feature
<222> (1)...(3862)
<223> n = a,t,c, or g

<400> 1
ggatcctgct ggctccgata actttgcttt atccaagggt ctcggcgaat gccaggtgcc   60
atcgatctat attttgaagt ttatcacctc aatggcttca ccccatgacg cacctttat   120
tttattttc attcatcttc tctgtggcaa acatgcaggt atgcgagctc tggaccctgg   180
ggtgtggccc ttgatgcata tggtttattt atagccgccc ggaagccctg gcctgttaaa   240
ttttggacct cctcccgcca ttctttccaa acttcgtgcg tccgtttccc atttcccccc   300
tccccatttg ggttccctat aggccactgc gtgctccact caagaagggt cccagtcaat   360
ttggtcccta ccctctccaa cactatctgc atatgtaata tatatcgata tctaactgcc   420
attgattatt tgtcttcttc agcatctttt tgtctcgagc aagcttactc cacgttcaat   480

```
tcagggggta aaaatgcggt cgctcaagct tatactcgcc tcggcgggtg ttgtttctgc    540
agcctgtccc tacatgtcag gggagatgcc tagcggtcag aaaggccccc tcgatcgccg    600
ccatgacact ctctccgacc ctacggacca gtttcttagc aagtttcaca ttgacgatga    660
acagtcggtg ctaacaacgg acgtgggtgg tcccatcgag gaccaacaca gcctgaaggc    720
tggaaatga ggcccaactc tacttgagga ttttatcttc cgccagaaga ttcaacactt    780
tgatcatgag agggtatgta gatacaaaat atgtgaccgt gttgcaaatc cgctaattca    840
attttacgca ggttcctgag cgcgccgtcc atgctcgagg agctggtgcc catggcgtat    900
tcacatccta taataactgg tcgaatatca cagccgcatc cttcttgaac gcggcaggaa    960
agcagacacc agtattcgtg cggttttcta cagtcgctgg tagcagaggc agtgttgact   1020
ctgctcgcga tatccacgga tttgcgaccc gtctgtatac cgatgaaggc aattttggta   1080
agcattatat cgtggtagtc atactcataa cagcacaaca aatatgaata caaacccagg   1140
acctaggctg actactcggc aatgtagata tcgtcggaaa caacgttcca gtcttcttca   1200
ttcaggacgc tattcaattc cctgatttga ttcacgctgt caagccgcaa ccagacagtg   1260
aaattcccca ggctgcaact gcacatgata cggcatggga tttcctcagc cagcagccca   1320
gctcattgca tgccctcttc tgggcaatgt caggacatgg aatccctcgc tcaatgcgtc   1380
atgttgatgg gtggggcgtc cataccttcc gacttgtcac cgacgagggc aactcgacct   1440
tggtcaagtt tcgctggaag accctccaag gaagagcggg cctggtatgg aagaggcac    1500
aggctcttgg cggaaagaat cccgacttcc atcgacaaga cctctgggat gccattgaat   1560
ctggaaggta ccctgagtgg gaggtaagat atgattcccc caaatcatta gttctgacag   1620
tgtttctctg ctctgtcggt tgctcttttc gtctttttct atatcttcaa ctaagactga   1680
ctttatatac gttttactca tatagctggg ctttcaattg gtgaatgaag cagatcaatc   1740
caagtttgat ttcgatctat tagatcccac caaaatcatc ccagaagaac ttgttccttt   1800
caccccaatc ggaaaaatgg tcttgaaccg aaacccaaaa agttattttg ccgaaactga   1860
gcagatcatg gttggtccac cccctatata tttggaatat gaatacatgt atagctagat   1920
gaagcgtata tctaaatata tttccacagt tccaaccagg tcatgtagtt cgcggaatcg   1980
atttcacgga tgacccttg cttcagggcc gcttgtactc ctaccttgac actcaattga   2040
atcgccatgg aggtcccaac ttcgagcaac tgccgatcaa cagaccccgc atcccattcc   2100
ataacaacaa tcgcgacggt gctggtaagc tacttctcac ctaccatgtc aacttccatc   2160
ttgacccaat cgatttgtat agagtattaa catccccgtc tgcacaggac aaatgttcat   2220
ccctctaaac acggccgcat atacacccaa ctcaatgagc aacggattcc cacaacaagc   2280
caaccggacc cataacagag gattcttcac cgcacctggg cgtatggtaa atggaccact   2340
agtgcgcgag ctcagcccga gcttcaacga cgtctggtcc caaccgcgtc tcttctacaa   2400
ctcactcacg gtcttcgaga agcaattcct cgtcaacgcc atgcgcttcg aaaactccca   2460
cgtgcggagt gaaaccgtgc gtaagaacgt catcatccag ctgaaccgcg tcgacaacga   2520
cctcgcccgc cgcgtcgcgc tagctatcgg cgtcgaaccc ccatccccgg acccaacctt   2580
ctaccacaac aaggcaaccg tccccatcgg caccttcggc acgaatctcc tgcggctcga   2640
cgggctgaaa atcgccctcc tgacaagaga cgacggtagc ttcacgatcg cggagcagct   2700
ccgggccgcg tttaacagcg ccaacaacaa agtagatatc gtcctagtgg gctcatcgct   2760
tgatccccaa cgcggcgtga acatgaccta ttccggcgcc gacggctcga tcttcgatgc   2820
cgtgatcgtc gtcggcggcc tgctcacgag cgcctcaacg caatacccaa gaggtcgccc   2880
gctcaggatt attacggatg catacgcgta tggaaagccc gttggcgccg tcggtgacgg   2940
tagcaatgaa gcccttcgtg acgtccttat ggccgctggt ggggatgcgt cgaatgggct   3000
ggaccagccc ggtgtgtata tttccaacga tgtgagtgag gcctacgtta gaagtgtctt   3060
ggacggattg acggcatatc ggttcttgaa tcggttcccg ttggatagaa gcttggtatg   3120
aggtttgggg cgcaaatatg ggtttactac ccccccccc cccttttttt ttttcctttt   3180
ctgttttcc atctttggtt gaggtaatat tgcagatatc agtaaattgc gtttacgaaa   3240
gccggtgtca agcttcanga ggcctaatta atttgaagag gaggttgaag tgaaatcttg   3300
gtgtaactat aataatttat aataactaat aacttataat taatgtctat tgtaatttcc   3360
tctcacattc aatctatatt tgatccttgt cctttgtagc tgtttaaata taagccaaga   3420
gagacaaata atgatagatt aacaaataat tgcacaccca ataggccttc cctcacgata   3480
tcagatatta tctatcatgt tgtaatgata cctcaaaaat gccacaagct tgcctgatat   3540
tgaatattta tatgctgtaa atgtagggaa gagcgtacca tccaaataac cagaaaaaca   3600
tgtttttagct taaaatctca ctaaggtcgg tcgtgtctat ttgaaatggc tgcggcaagc   3660
```

```
tgactatctg ataaaaatgt ctgtatttcc gcttcacgac gcatgttatg actttcgaat    3720
atagataaaa cctgaacgat ttagcccctg ttgggggaaa tagggggttag gggggcgagc   3780
tacatatcat tcccatatga ccaaaaacta aaatagatat atatatatat atatatatat    3840
acaacacctt caaaaggat cc                                               3862
```

<210> 2
<211> 707
<212> PRT
<213> Histoplasma capsulatum

<400> 2

```
Met Pro Ser Gly Gln Lys Gly Pro Leu Asp Arg Arg His Asp Thr Leu
  1               5                  10                  15
Ser Asp Pro Thr Asp Gln Phe Leu Ser Lys Phe Tyr Ile Asp Asp Glu
             20                  25                  30
Gln Ser Val Leu Thr Thr Asp Val Gly Gly Pro Ile Glu Asp Gln His
         35                  40                  45
Ser Leu Lys Ala Gly Asn Arg Gly Pro Thr Leu Leu Glu Asp Phe Ile
     50                  55                  60
Phe Arg Gln Lys Ile Gln His Phe Asp His Glu Arg Val Pro Glu Arg
65                  70                  75                  80
Ala Val His Ala Arg Gly Ala Gly Ala His Gly Val Phe Thr Ser Tyr
                 85                  90                  95
Asn Asn Trp Ser Asn Ile Thr Ala Ala Ser Phe Leu Asn Ala Ala Gly
             100                 105                 110
Lys Gln Thr Pro Val Phe Val Arg Phe Ser Thr Val Ala Gly Ser Arg
         115                 120                 125
Gly Ser Val Asp Ser Ala Arg Asp Ile His Gly Phe Ala Thr Arg Leu
     130                 135                 140
Tyr Thr Asp Glu Gly Asn Phe Asp Ile Val Gly Asn Asn Val Pro Val
145                 150                 155                 160
Phe Phe Ile Gln Asp Ala Ile Gln Phe Pro Asp Leu Ile His Ala Val
                 165                 170                 175
Lys Pro Gln Pro Asp Ser Glu Ile Pro Gln Ala Ala Thr Ala His Asp
             180                 185                 190
Thr Ala Trp Asp Phe Leu Ser Gln Gln Pro Ser Ser Leu His Ala Leu
         195                 200                 205
Phe Trp Ala Met Ser Gly His Gly Ile Pro Arg Ser Met Arg His Val
     210                 215                 220
Asp Gly Trp Gly Val His Thr Phe Arg Leu Val Thr Asp Glu Gly Asn
225                 230                 235                 240
Ser Thr Leu Val Lys Phe Arg Trp Lys Thr Leu Gln Gly Arg Ala Gly
                 245                 250                 255
Leu Val Trp Glu Glu Ala Gln Ala Leu Gly Gly Lys Asn Pro Asp Phe
             260                 265                 270
His Arg Gln Asp Leu Trp Asp Ala Ile Glu Ser Gly Arg Tyr Pro Glu
         275                 280                 285
Trp Glu Leu Gly Phe Gln Leu Val Asn Glu Ala Asp Gln Ser Lys Phe
     290                 295                 300
Asp Phe Asp Leu Leu Asp Pro Thr Lys Ile Ile Pro Glu Glu Leu Val
305                 310                 315                 320
Pro Phe Thr Pro Ile Gly Lys Met Val Leu Asn Arg Asn Pro Lys Ser
                 325                 330                 335
```

```
Tyr Phe Ala Glu Thr Glu Gln Ile Met Phe Gln Pro Gly His Val Val
            340             345             350
Arg Gly Ile Asp Phe Thr Asp Asp Pro Leu Leu Gln Gly Arg Leu Tyr
            355             360             365
Ser Tyr Leu Asp Thr Gln Leu Asn Arg His Gly Gly Pro Asn Phe Glu
    370             375             380
Gln Leu Pro Ile Asn Arg Pro Arg Ile Pro Phe His Asn Asn Asn Arg
385             390             395             400
Asp Gly Ala Gly Gln Met Phe Ile Pro Leu Asn Thr Ala Ala Tyr Thr
            405             410             415
Pro Asn Ser Met Ser Asn Gly Phe Pro Gln Gln Ala Asn Arg Thr His
            420             425             430
Asn Arg Gly Phe Phe Thr Ala Pro Gly Arg Met Val Asn Gly Pro Leu
            435             440             445
Val Arg Glu Leu Ser Pro Ser Phe Asn Asp Val Trp Ser Gln Pro Arg
    450             455             460
Leu Phe Tyr Asn Ser Leu Thr Val Phe Glu Lys Gln Phe Leu Val Asn
465             470             475             480
Ala Met Arg Phe Glu Asn Ser His Val Arg Ser Glu Thr Val Arg Lys
            485             490             495
Asn Val Ile Ile Gln Leu Asn Arg Val Asp Asn Asp Leu Ala Arg Arg
            500             505             510
Val Ala Leu Ala Ile Gly Val Glu Pro Pro Ser Pro Asp Pro Thr Phe
            515             520             525
Tyr His Asn Lys Ala Thr Val Pro Ile Gly Thr Phe Gly Thr Asn Leu
    530             535             540
Leu Arg Leu Asp Gly Leu Lys Ile Ala Leu Leu Thr Arg Asp Asp Gly
545             550             555             560
Ser Phe Thr Ile Ala Glu Gln Leu Arg Ala Ala Phe Asn Ser Ala Asn
            565             570             575
Asn Lys Val Asp Ile Val Leu Val Gly Ser Ser Leu Asp Pro Gln Arg
            580             585             590
Gly Val Asn Met Thr Tyr Ser Gly Ala Asp Gly Ser Ile Phe Asp Ala
            595             600             605
Val Ile Val Val Gly Gly Leu Leu Thr Ser Ala Ser Thr Gln Tyr Pro
610             615             620
Arg Gly Arg Pro Leu Arg Ile Ile Thr Asp Ala Tyr Ala Tyr Gly Lys
625             630             635             640
Pro Val Gly Ala Val Gly Asp Gly Ser Asn Glu Ala Leu Arg Asp Val
            645             650             655
Leu Met Ala Ala Gly Gly Asp Ala Ser Asn Gly Leu Asp Gln Pro Gly
            660             665             670
Val Tyr Ile Ser Asn Asp Val Ser Glu Ala Tyr Val Arg Ser Val Leu
    675             680             685
Asp Gly Leu Thr Ala Tyr Arg Phe Leu Asn Arg Phe Pro Leu Asp Arg
690             695             700
Ser Leu Val
705
```

```
<210> 3
<211> 8
<212> PRT
<213> Histoplasma capsulatum

<400> 3
Ser Asp Pro Thr Asp Gln Phe Leu
 1               5

<210> 4
<211> 15
<212> PRT
<213> Histoplasma capsulatum

<400> 4
Asp Phe Ile Phe Arg Gln Lys Ile Gln His Phe Asp His Glu Arg
 1               5                   10                  15

<210> 5
<211> 9
<212> PRT
<213> Histoplasma capsulatum

<400> 5
Thr Leu Gln Gly Arg Ala Gly Leu Val
 1               5

<210> 6
<211> 16
<212> PRT
<213> Histoplasma capsulatum

<400> 6
Ala Gln Ala Leu Gly Gly Lys Asn Pro Asp Phe His Arg Gln Asp Leu
 1               5                   10                  15

<210> 7
<211> 6
<212> PRT
<213> Histoplasma capsulatum

<400> 7
Ser Gly Arg Tyr Pro Glu
 1               5

<210> 8
<211> 10
<212> PRT
<213> Histoplasma capsulatum

<400> 8
Phe Asp Phe Asp Leu Leu Asp Pro Thr Lys
 1               5                   10
```

```
<210> 9
<211> 14
<212> PRT
<213> Nucleic Acid

<400> 9
Ile Ile Pro Glu Glu Leu Val Pro Phe Thr Pro Ile Gly Lys
 1               5                   10
```

```
<210> 10
<211> 15
<212> DNA
<213> Unknown

<400> 10
aaraayccvg aytty                                              15
```

```
<210> 11
<211> 14
<212> DNA
<213> Unknown

<220>
<221> misc_feature
<222> (1)...(14)
<223> n = a,c,t or g

<400> 11
ttnccdatng traa                                              14
```

```
<210> 12
<211> 22
<212> DNA
<213> Unknown

<400> 12
cggaatcctc cgaccctacg ga                                     22
```

```
<210> 13
<211> 27
<212> DNA
<213> Unknown

<400> 13
accaagcttc tatccaacgg gaaccga                                27
```